

### REMARKS

In the Office Action, the Examiner rejected claim 1-18, 20-41 and 44-45 under 35 USC 103. These rejections are fully traversed below.

Claim 47 has been allowed.

Claims 1-3, 9, 19, 20-25, 35-38 and 45 have been amended. Claims 48-60 have been added. Claims 29-34 have been cancelled. Thus, claims 1-28, 35-41 and 44-60 are pending in the application. Reconsideration of the application is respectfully requested based on the following remarks.

### ***ISSUES UNDER 35 USC 103(a)***

**Claims 23 and 32 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Karaki et al* (5,130,965).**

Claim 32 has been cancelled. The limitations of claim 32 have been moved into claim 23.

In contrast to *Karaki*, claim 23 specifically requires, “ An optical inspection system...” As mentioned throughout prosecution, *Karaki* is not directed at inspection devices at all, but rather recording and reproducing devices associated with compact discs. Accordingly, the rejection is unsupported by the art and should be withdrawn.

Also in contrast to *Karaki*, claim 23 specifically requires, “...the diffraction grating being arranged for separating the light beam into a plurality of light beams which form scanning spots on the surface of the mask, reticle or semiconductor wafer...” While *Karaki* may disclose a diffraction grating 4 adapted to divide a parallel beam flux into a primary and diffraction beams that form spots S1, S2 and S3 on a recording medium 8, *Karaki* does not teach or suggest forming scanning spots, let alone scanning spots on the surface of a mask, reticle or semiconductor wafer. In *Karaki*, the spots do not scan, but rather follow tracks, T. In addition,

the spots are formed on recording medium such as a compact disc rather than a mask, reticle or semiconductor wafer. Accordingly, the rejection is unsupported by the art and should be withdrawn.

Also in contrast to *Karaki*, claim 23 specifically requires, "...each of the scanning spots having a specified overlap and separation with respect to one another that is controlled by the grating spacing and the rotation of the diffraction grating about the optical axis..." Since *Karaki* does not teach such an element, the Examiner asserted that the motivation to provide such an element would come from the need to ensure the entire surface is scanned. As stated by the Examiner, "...it would have been obvious to one having ordinary skill in the art at the time the invention was made to control the space of the grating or the rotating angle of the grating so that the scanning spots having a specified overlap to ensure the entire surface is scanned." This assertion, however, is incorrect. *Karaki* simply does not teach or suggest scanning let alone scanning the entire surface of the recording medium and thus there is no motivation to modify the reference. In *Karaki*, the spots follow tracks, T. They do not scan over the surface of the recording medium. In fact, the spots S2 and S3 are included for the purpose of keeping the spot S1 on the track. *Karaki* states, "...the second beam B2 and the third beam B3 are serve only for monitoring the status of the information track (Col. 2, lines 20-23)." Accordingly, the rejection is unsupported by the art and should be withdrawn.

**Claims 1-18, 20-22, 24-31, 33-41 and 44-45 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Sanada* et al (6,084,716) in view of *Shikichi* et al (5,151,888) (or *Karaki* et al (5,130,965)) and *Shiozawa* et al (5,726,740).**

Throughout prosecution the Applicant has asserted that a prima facie case of obvious with regards to *Sanada*, *Shikichi* and *Karaki* has not been properly made. As mentioned in previous responses, the prima facie obviousness rejections are defective in that: 1) There is no basis in the art for combining or modifying the cited references *Shikichi* or *Karaki* and *Sanada* to produce the present invention, 2) The combination of *Shikichi* to *Sanada* would destroy the function of the invention disclosed in *Shikichi* and the combination of *Karaki* to *Sanada* would destroy the function of the invention disclosed in *Karaki*, 3) *Karaki* and *Shikichi* teach away from portions of the claimed invention, 4) *Karaki* and *Shikichi* are nonanalogous art. The addition of *Shiozawa* does not overcome their defectiveness. Similar to above, it is at least believed that there is no basis in the art for combining *Shiozawa* with *Sanada* and that *Shiozawa*

is nonanalogous art. With regards to these matters, it appears that the Examiner used the Applicant's disclosure as a blue print to reconstruct the claimed invention out of isolated teachings in the prior art. *Shiozawa* is not directed at an inspection system at all, but rather a projection exposure apparatus. Inspection and exposure are two different things. Inspection includes finding defects while exposure includes forming patterns (e.g., lithography). It should be emphasized that the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill would have been prompted to combine the teachings of the references to arrive at the claimed invention. One skilled in the art of inspection systems would simply not look for the prism structure in *Shiozawa* to improve the inspection speed of an inspection system.

Although the undersigned limited the defective prima facie case obvious rejection discussion primarily to *Shiozawa*, it should be noted that the Applicant maintains the previous assertions for defective prima facie case obvious rejections associated with *Shikichi*, *Karaki* and *Sanada*. Again, it seems that there are several layers of separation between the references that make it difficult to imagine a valid combination.

Even in lieu of the above, the rejections should be withdrawn for at least the following reasons:

In contrast to all the references, claim 1 (and its dependents) specifically requires, "a light detector arrangement including individual light detectors that each receive individual ones of the plurality of transmitted light beams." *Shiozawa* is silent to inspection and thus light detectors associated therewith. And while *Sanada* may disclose receiving transmitted light, *Sanada* does not teach or suggest a plurality of detectors, each of which receives a distinct transmitted light beam. *Sanada* only discloses using one detector (406). Furthermore, while *Karaki* or *Shikichi* may disclose a plurality of detectors, *Karaki* or *Shikichi* do not teach or suggest a plurality of detectors, each of which receives a distinct transmitted light beam. In *Karaki*, light is used to record and reproduce on or from a rotating compact disc, and in *Shikichi*, light is used to record and reproduce on or from an optical card. This is accomplished by receiving "reflected light beams" not transmitted light beams that have passed through the substrate. As stated in claim 1, "...a plurality of transmitted light beams caused ....by passing the plurality of light beams through the substrate." As mentioned previously, *Karaki* is directed towards compact discs that include a reflective surface for reading information therefrom. If the reflective surface had

transparent portions then the information on the compact disc would not be able to be read. For example, the tracking beams would not be able to follow the track and thus the recording and reproducing beam would be lost. Furthermore, *Shikichi* uses reflectance to detect tracks of information. If light was transmitted through the optical card then the intended function of detecting information via reflectance would be destroyed. To further this point, the optical card includes a recording layer having tracks, which contain recorded information that is optically detected via their reflectance. In order to use transmitted light, the recording layer would have to have transparent portions, which would adversely effect the tracking of tracks, the recording of pit rows, reproducing of pit rows and the like (see Col. 2, lines 33-43). Hence, neither reference teaches or suggests individual light detectors that receive transmitted light beams. Accordingly, the rejection is unsupported by the art and should be withdrawn.

In contrast to all of the references, claim 22 (and its dependents) specifically requires, "...planarly transporting the mask, reticle or semiconductor wafer in at least a linear and planar first direction..." and "...deflecting the initial light beam in a second direction that is substantially perpendicular to the first direction..." All the references are silent to deflecting the initial beam in a direction perpendicular to the direction the substrate is moved. Accordingly, the rejection is unsupported by the art and should be withdrawn.

In contrast to all the references claim 24 (and its dependents) specifically requires, "...sweeping the plurality of light beams so as to move the plurality of scanning spots along the surface of the reticle, mask or semiconductor wafer in a direction that traverses the direction of the linear scan path..." All the references are silent to moving scanning spots in a direction that crosses the direction of the linear scan path. Also in contrast to all the references claim 24 (and its dependents) specifically requires, "...a light detector arrangement including individual light detectors that correspond to individual ones of the plurality of reflected or transmitted light beams caused by the intersection of the plurality of light beams with the surface of the reticle, mask or semiconductor wafer..." Accordingly, the rejection is unsupported by the art and should be withdrawn.

In contrast to all the references claim 25 (and its dependents) specifically requires, "...a beam deflector for deflecting the single light beam in a second direction that is perpendicular to the first direction..." None of the references teach or suggest deflecting a single beam let alone

deflecting a single beam in a direction perpendicular to the direction the substrate is moved via a stage. Accordingly, the rejection is unsupported by the art and should be withdrawn.

In addition, claim 25 (and its dependents) specifically requires, "...a transmitted light prism for receiving the transmitted light beams and for directing each of the plurality transmitted light beams to an individual light detector capable of sensing the light intensity of a single transmitted light beam..." and "...a reflected light prism for receiving the reflected light beams and for directing each of the plurality reflected light beams to an individual light detector capable of sensing the light intensity of a single reflected light beam." None of the references teach or suggest a transmitted light prism or a reflected light prism as above let alone the combination of the two prisms as required by claim 25. Accordingly, the rejection is unsupported by the art and should be withdrawn.

In contrast to all the references claim 41 (and its dependents) specifically requires, "...a telescope for varying the size of the scanning spots on the surface of the substrate..." None of the references teach or suggest varying the size of the scanning spots as required by claim 41. Accordingly, the rejection is unsupported by the art and should be withdrawn.

Although the rejections to the dependent claims 2-18, 20, 21, 26-28, 35-40, 44-45 should be withdrawn for at least the reasons as above, it should be noted that they offer additional language that is unsupported by the art.

#### ***ALLOWABLE SUBJECT MATTER***

Claim 47 has been allowed.

**SUMMARY**

Applicants believe that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,

BEYER WEAVER & THOMAS, LLP

A handwritten signature in black ink, appearing to read "Q. Hoellwarth", with a long horizontal flourish extending to the right.

Quin C. Hoellwarth

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